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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,905	08/27/2003	Hidenobu Hamada	MTS-3453US	5089

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EXAMINER	
SONG, SARAH U	
ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,905	HAMADA, HIDENOBU	
	Examiner	Art Unit	
	Sarah Song	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *15-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☒ Claim(s) *10-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0803,1204*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Claims 1-14 in the reply filed on May 31, 2005 is acknowledged.

2. Claims 15-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 31, 2005.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The prior art documents submitted by the applicant in the Information Disclosure Statements filed on August 27, 2003 and December 10, 2004 have all been considered and made of record (note the attached copy of form PTO-1449).

Claim Objections

5. Claim 11 is objected to because of the following informalities: in line 4, Examiner suggests changing "film" to –slab—to provide antecedent basis for the limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 1, 2 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Cotteverte et al. (U.S. Patent 6,542,682).**

8. Regarding claim 1, Cotteverte et al. discloses a slab waveguide comprising a two-dimensional crystal grating having columnar members 108 having a refractive index different from the refractive index of a slab and two-dimensionally and periodically arranged along a surface of the slab, wherein the refractive index of a slab refractive index portion other than said columnar members in the slab, the number, the shape and the refractive index of said columnar members in the slab are selected so that when a beam of light entering the slab waveguide expands to a maximum extent, the size of the beam in the slab thickness direction does not exceed the slab thickness. See column 8, lines 1-12.

9. Regarding claim 2, the refractive index of said slab refractive index portion in a direction perpendicular to the slab surface is maximized at a predetermined portion (i.e. the core layer 102) other than end portions in the slab refractive index portion, and is not increased with the increase in distance from the predetermined portion.

10. Regarding claim 9, at least one of the boundary surfaces between said slab refractive index portion and said columnar member 108 has a curved surface (the circumferential surface of the columnar member 108). See Figure 14.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. **Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cotteverte et al. as applied to claim 2 above, and further in view of Beltrami et al. (*Planar graded-index (GRIN) PECVD lens*, cited by Applicant).**

13. Regarding claims 3-5, Cotteverte et al. does not expressly disclose the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is distributed symmetrically about the predetermined portion, the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is reduced in accordance with a quadratic function or a approximately quadratic function of the distance from the predetermined portion, or wherein the predetermined portion is a region of a predetermined length other than the end portions in said slab refractive index portion, and the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is substantially constant in the region having the predetermined length other than the end portions in said slab refractive index portion and is reduced in accordance with a quadratic function or a approximately quadratic function of the distance from an end of the region having the predetermined length.

14. Beltrami et al. discloses a graded index planar waveguide structure wherein disclose the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is distributed symmetrically about the predetermined portion, the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is reduced in accordance with a quadratic function or a approximately quadratic function of the distance from the predetermined portion, or wherein the predetermined portion is a region of a predetermined

length other than the end portions in said slab refractive index portion, and the refractive index of said slab refractive index portion in the direction perpendicular to the slab surface is substantially constant in the region having the predetermined length other than the end portions in said slab refractive index portion and is reduced in accordance with a quadratic function or a approximately quadratic function of the distance from an end of the region having the predetermined length. See page 549, right column.

15. Cotteverte et al. and Beltrami et al. are analogous art as pertaining to planar waveguides.

16. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the quadratic or approximately quadratic refractive index profile of Beltrami et al. in the device of Cotteverte et al. for the purpose of providing periodic focusing characteristics for improving coupling efficiency of the waveguide of Cotteverte et al.

17. Regarding claims 6-8, Cotteverte et al. and Beltrami et al. do not expressly disclose the refractive index distribution constant, optical integer multiple pitch defining a path length, or the sum of incidence-side and emergence-side focal distances as claimed. However, the claimed limitations would have been obvious since it has been held that where the general conditions of a claim are disclosed by the prior art, discovering optimum or workable ranges and values involves only routine skill in the art. MPEP 2144.05(II).

Allowable Subject Matter

18. Claims 10-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and also rewritten to overcome applicable objections noted above.

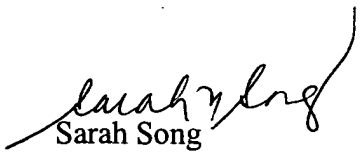
19. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not disclose or reasonably suggest a curved boundary surface in the thickness direction of the slab as recited in claim 10, or a boundary surface comprising a flat surface in a region having a predetermined length other than end portions in said slab refractive index portion, and curved surfaces in the film thickness direction of the slab outside the region having a predetermined length. Baba et al. (cited by Applicant) shows a curved boundary surface in Figures 1b resulting from the manufacturing process. However, the prior art of record provide no suggestion or motivation to provide such a curved surface in the device of Cotteverte et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is 571-272-2359. The examiner can normally be reached on M-Th 7:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sarah Song
Patent Examiner
Group Art Unit 2874